

Chapter 5: Towards a National Land Information Infrastructure for Managing Layered Property Markets in Federated Countries

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Overview

The dominant focus of how we live and operate in society has changed over the last decade, to the economic reality of scarce natural resources and a shared vision for sustainable development. New markets are emerging as a way to manage scarce resources as new land interests are recognised. Land administration provides the infrastructure for secure land market transactions, and government macroeconomic policies work to manage the economy as a whole. As new land markets develop, there is an increasing need for better, more reliable information for improved economic management of land and its resources.

This need is most evident in many federated market economies where land administration is undertaken by state, provincial, or local governments; while, macroeconomic policies to manage land markets occur at central level. In these countries, the capacity of independent, state-based land administration agencies to meet increasingly national drivers, particularly national economic policy, is challenging. This stems from an information asymmetry often caused by inadequate information flows between state and central governments. State-based laws and processes make it difficult for central policy departments to access integrated land information, to manage markets that are increasingly national in focus. Past, traditional approaches to improve land information access include:

- standard ontologies and conceptual schemas such as the Federated Data Model for land administration (Tuladhar and Radwan, 2005) and the Land Administration Domain Model (van Oosterom et al., 2006)
- collaborative approaches (Warnest et al., 2005; McDougall, 2006)
- systems theory (see Zevenbergen, 2001).

These, among others, have achieved varying levels of success. However new markets are threatened by information asymmetries in the land sector that still remain unchecked, and there is an increasing need for an unencumbered, innovate approach. In particular, the increasing focus on sustainable development, natural systems and 'green' economies has shown the utility of biomimicry. Biomimicry, a principle of natural capitalism, uses nature as a model, to study and design real-world systems that emulate the efficiency and sustainability of processes in nature. It allows for a new, modern approach to unify land administration and macroeconomic policy for sustainable development.

This chapter draws on principles from natural capitalism, to design a land market information flow lifecycle that establishes an operational link between land administration agencies and central macroeconomic policy departments, in federated market economies. It advocates holistic management of land and its resources for better national economic policy and sustainable development.

Research Problem and Significance

Increasingly, market mechanisms are being adopted to meet the changing focus of economic growth on sustainable development. Mixed capital economies in particular, operate fundamentally through a market structure, where the price of goods and services is controlled largely by supply and demand in the private sector, and regulated by public sector economic policy. The role of fiscal policy, or broadly speaking spending and taxes, is to maintain a balanced yet growing national economy. Controlling the revenue and expenditure of the public sector via fiscal policy is used as a means of combating unemployment and balancing the demand in the private sector.

Similarly monetary policy, generally controlled by a country's central bank, is used to regulate the supply of money and interest rates in the national economy. This serves as a means of achieving high employment, positive economic growth and low inflation.

In a land market, formal transactions are only possible through the existence of land administration infrastructures that allow for private land ownership to be registered, land values to be established, and rights in land to be exchanged in a market environment. As such, these administrative structures have a critical impact on the economy as a whole.

In many federated countries such as the United States, Australia and India, land administration functions fall into the constitutional authority of the state and territory governments. Essentially, the land registry that maintains ownership information is part of the state government. Information is sourced from various other departments, developers, surveyors or from local governments. Similarly, the land or property valuations department also forms part of the state governments. Often property valuation methods can be as varied as the property laws in various jurisdictions. Data relating to ownership and value of properties is generally stored in multiple jurisdictional databases.

In these countries, fiscal and monetary policies to manage the land markets are implemented at a central level. The major vehicle or tool is an increase or decrease to the bank rate of interest that feeds directly into the cost of borrowing for real estate transactions. If the information available to national agencies about the real state of the market is inaccurate, their ability to make sensible interventions is jeopardised.

For instance, the recent global financial crisis (2007 onwards) decreased real estate values in major market economies around the world. From the land administration perspective, part of this crisis was a result of poor decision making and ill-informed policy due to the lack of national property datasets, particularly in the United States (Buhler and Cowen, 2010). The financial crisis affected the federal governments of many economies through lower tax revenues and duties from both income and capital gains tax, and increased spending in the form of economic stimuli. Essentially, fiscal and monetary policy decisions to combat the financial crisis left many market economies with large budget deficits and significant foreign debt. By mid 2010, a sense of urgency was evident in efforts to redefine the role played by land administration in implementing central policies that manage land markets, especially in federated mixed capitalist nations.

In many mixed capitalist countries, sustainable development objectives to better manage scarce natural resources have led to new land rights that add to the complexity of administering land and economic management. Legal interests in land are increasingly complex and land management now involves environmental, heritage and use restrictions. New forms of property as tradable commodities are also emerging, for example water, biota, mining and carbon credits (Wallace and Williamson, 2006). These new markets involve new taxable commodities and transactions, and changes to the availability and supply of money in the economy. New interests in land resources must be attached to a land parcel to become

functional. As such, all marketable rights in land must be managed holistically to avoid new silo-like approaches emerging.

The heart of the problem lies in the need for increased information about transactions in land and resources, in order for economic policy decisions to meet a country’s sustainable development objectives. Where market mechanisms are being adopted, information asymmetries are a significant cause of market failure (Cohen and Winn, 2007). Federated countries in particular need to improve their administrative structures to enable a flow of information that minimises information asymmetries, between the government collectors and users of land information.

Traditional approaches to improve land information access have not adequately addressed the issue of information asymmetries between levels of government in federated countries, which can lead to market failure. This is of growing concern as new land markets emerge. A novel approach is needed. The research undertaken here is the first of its kind to apply the principles of natural capitalism to the discipline of land administration. It presents a land market information flow lifecycle, derived from cyclical processes in nature, to deliver a public good system. The system consists of principles to assist national integration of land transaction data held in diverse models and organisations. The research aims to bring together the disciplines of land administration, macroeconomic policy and sustainable development through a ‘conscious emulation of life’s genius’ (Benyus, 2002).

Major outcomes

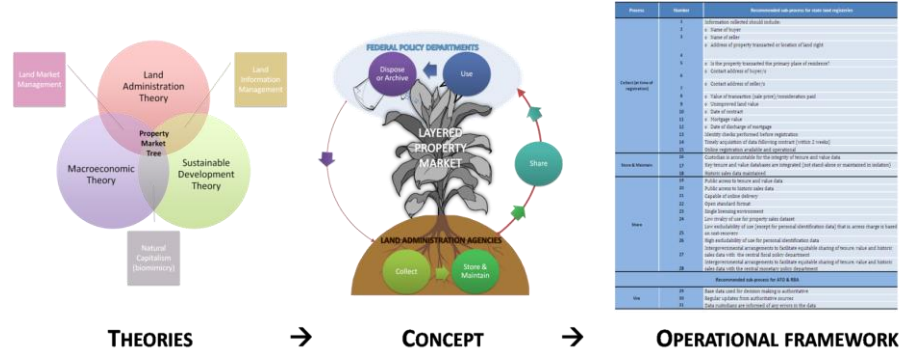


Figure 1: The theories, conceptual model and operational framework developed within this research.

This research project addresses the issues with current land administration processes in federated counties, and evaluates the need for national land information infrastructures for sustainable management of current and emerging land markets. The project presents a land market information flow lifecycle, derived from the principles of biomimicry, to achieve national integration of land information as a solution for minimising information asymmetries that can lead to market failure.

The following are the major outcomes of this work (Figure 1):

- i. understanding of link between land administration, macroeconomic policy, sustainable development and the role of natural capitalism
- ii. development of a new conceptual model for a national land information infrastructure
- iii. assessment of the model in practice to identify areas where the model can be improved to create an operational tool. Using a case study approach, land information flows in the following state-based land and resource markets in Australia are mapped against the conceptual model:
 - property and water markets in Victoria
 - property and water markets in Western Australia
 - property, water and carbon markets in New South Wales
- iv. Principles are derived from the case studies to refine the model into an operational framework that can be used to achieve a national land information infrastructure.

A potential application of integrated market transaction information is also presented via the 3D property market tool, as an added decision-making aid. It is based on the property object approach (Kaufmann and Steudler, 1998, Van Oosterom et al., 2006, Bennett et al., 2008), and visualises transactions in the form of tax and interest objects: Figure 2.

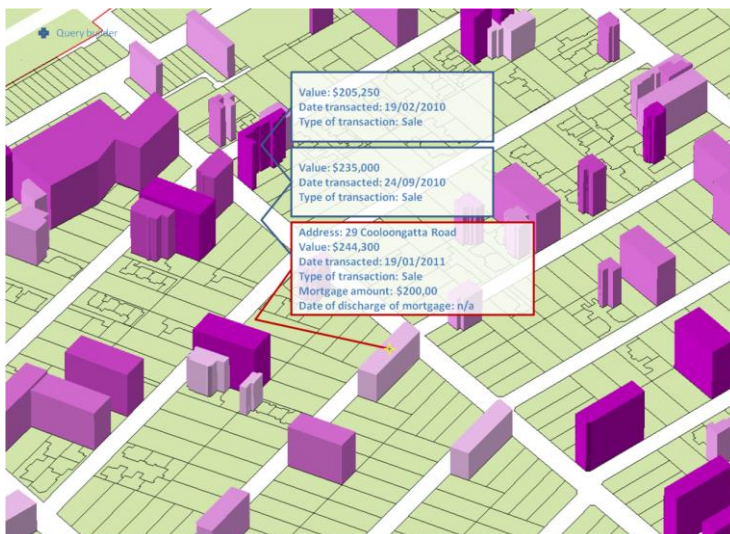


Figure 2: 3D property market tool showing attribute data attached to an interest/tax object.

Future directions

This research does not claim to fully solve the problem of a national land information infrastructure; and needs to be built upon particularly to:

- understand the land information needs of other central government departments and national agencies and to establish a dissemination framework
- understand how informal land markets can be better accounted for within a country's economy
- determine the functionality of other land related resources, such as mineral deposits, timber and fisheries in relation to land.

Recommendations

Technological advancements have enabled land administration processes to evolve from paper-based to digital systems. Better integration at a national level can be achieved and needs to be prioritised. User-driven information collection and cross-governmental sharing will be key to meeting the land information requirements of central policy makers.

New options for enabling more seamless land information flows need to be prioritised, enabling horizontal integration of jurisdictional datasets, followed by vertical integration from local to national level. The statutory powers of state government land agencies need to allow for increased data sharing. Siloed approaches need to be acknowledged and incorporated into a nation-wide land information infrastructure.

Independent land administration agencies have the incentive to make significant economic gains by repairing their institution frameworks and incorporating cross-governmental sharing into their business models. Central government policy makers have the opportunity to recognise the invaluable authoritative data stores currently available within state land agencies. There is great potential for improved access to this authoritative and assured land information as the evidence-base for policy marking.

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